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AUTHOR Lamb, Michael E.
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ABSTRACT

This paper summarizes the findings of a series of studies on the effects of "ecological variables" on mother-father-sibling-infant interactions. Under consideration were: (1) the effects of stress on the parental preferences of young infants; (2) the effects of the presence of one parent on the interactions within the other parent-infant dyad; (3) the effects of the presence of one parent on sibling-infant and parent-child interaction; and (4) the effect of a sibling's presence on parent-infant interaction. Analyses of parent-child interaction focused on five affiliative behaviors (smile, vocalize, look, laugh and proffer) and six attachment behaviors (proximity, touch, approach, seek to be held, fuss and reach). For research on sibling-infant interaction, eight behavioral measures were added. Parental vocalization to child was recorded as an index of parental activity. All studies involved at least 20 subjects, at different points in the 7- to 24-month age range. Significance of the stress factor is discussed in light of varying results at different ages. It is indicated that, while mothers are the primary attachment figures of young infants, the fact that distressed infants treat mothers and fathers similarly when only one is accessible, and the fact that infants of certain ages discriminate mother and father from friendly strangers, indicate that fathers are important attachment figures. Findings also indicate that infants from 12 to 24 months of age interact far more with either parent when alone with him or her than when both parents are present. The effects of the entrance of a stranger sibling or other parent on affiliative interaction are also discussed. (Author/BF)

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THE EFFECTS OF ECOLOGICAL VARIABLES ON PARENT-INFANT INTERACTION

Michael E. Lamb

University of Wisconsin

Madison

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Most discussions of "ecological validity" have emphasized the pitfalls potentially inherent in observing children engaged in unrepresentative interactions in strange settings (cf. Bronfenbrenner, 1974). Curiously little attention has been paid to demonstrating how violations of the natural context affect children and their interaction styles, and how these effects in turn might lead to erroneous conclusions about developmental processes. This presentation, consequently, will summarize the findings of a series of studies focused on the effects of "ecological variables" on mother-father-sibling-infant interactions.

There are four central questions I wish to address:

First, what are the effects of stress on the parental preferences of young infants;

Second, what are the effects of the presence of one parent on the interactions within the other parent-infant dyad;

Third, what are the effects of the presence of one parent on sibling-infant and parent-child interaction; and

Finally, what effect does a sibling's presence have on parent-infant interaction.

I will open with the briefest description of our methodology. Further details and behavioral definitions can be found in the published reports of these studies (Lamb, 1976a, 1976b, 1976c, 1976e, 1977c, 1977d). In the early studies, data were gathered by an observer who dictated detailed narrative accounts of the infants' behavior which were subsequently transcribed and coded.

In the later studies, we employed a more efficient keyboard-recorder system which permitted computerized transcription (cf. Stephenson, Smith, & Roberts, 1975). In analyses of parent-child interaction we have focused on five affiliative behaviors--smile, vocalize, look, laugh, and proffer--and six attachment behaviors--proximity, touch, approach, seek to be held, fuss, and reach. We considered only one parental behavior--vocalization to the child or infant--which served as an index of parental activity. In our recent research on sibling-infant interaction, we added eight behavioral measures developed for research on peer interaction by Eckerman and her colleagues (1975). These measures are: Accept toy, take over toy, take toy, struggle, strike, coordinate play, imitate, and play with same materials. Inter-observer and inter-coder reliability have been monitored regularly and rates of agreement have been consistently satisfactory. All studies have involved at least 20 subjects and all reported findings attained conventional ($p < .05$) levels of significance.

Let us first consider research on the effects of stress on parental preference. For these purposes, I will discuss only the attachment behavior measures, since there is reason to believe that the display of affiliative behaviors tells us little about enduring affective preferences (cf. Lamb, 1976d). Rather, the frequency of affiliative interaction appears to be a function of the partner's social responsiveness in the immediate situation.

All the available evidence (cf. Lamb, 1977a) indicates that infants of 7 to 13 months of age show no preferences for either parent when observed in stress-free circumstances. This is true in both home and laboratory settings. Even after the onset of stress--whether it be occasioned by fatigue, brief parent-child separations, or the entrance of a strange adult--8 and 24 month-olds continue to show no clear preference for either parent (Lamb, 1976b, 1976c). Among 12- and 18-month-olds, however, we have found that stress has very clear

effects on parental preferences. When both parents are accessible, distressed infants seek to be comforted by their mothers rather than by their fathers (Lamb, 1976a, 1976e). The potency of stress is dramatized by our findings concerning 18-month-olds. Infants of this age prefer to interact with their fathers in stress-free situations, yet as stress mounts, they shift their attention from their fathers to their mothers. Interestingly, however, distressed infants organize their behavior around mothers and fathers indistinguishably when only one parent is present (Lamb, 1976a, 1976e; cf. Feldman & Ingham, 1975).

According to ethological theorists such as Bowlby and Ainsworth, stress should activate the attachment behavior system, thereby increasing the display of attachment behaviors to primary attachment figures at the expense of secondary attachment figures. This, in turn, should enhance relative preferences. Consequently our results indicate that mothers are, in fact, the primary attachment figures of young infants--the results of our home observations notwithstanding. On the other hand, the fact that distressed infants treat mothers and fathers similarly when only one is accessible, as well as the fact that infants of 7-24 months of age discriminate mothers and fathers from friendly strangers, both indicate that fathers, like mothers, are important attachment figures.

These data, therefore, oblige me to emphasize two points. First, the manipulation of these two ecological variables--whether the infant is distressed and whether the situation affords the infant a choice between the two parents--yields important information about infant social relationships. Second, though, you should note that none of the contexts can be viewed as "ecologically valid" or "ecologically invalid" and that all the data are equally valuable. The contextual effects I have described were all theoretically predictable and interpretable, and all contribute to our knowledge of the infant social world.

The same is true, I believe, of the information we have gathered about the effect of one parent's presence on the infant's interaction with the other parent. I have already noted the importance of this parameter when considering the behavior of distressed infants, and our research indicates that this ecological variable has a marked impact on the behavior of content infants as well.

When care is taken to avoid any possible confound with distress, our studies have shown consistently that 12-, 18-, and 24-month-old infants interact far more with either parent when alone with him or her than when both parents are simultaneously present. The parents, too, are far less active in interaction with the child when their spouse is present (Lamb, 1976a, 1977c, 1977e).

On further exploration, we found that the "intruder" (or third person) need not be the other parent. The entrance of a stranger and the entrance of a parent had similar effects on the affiliative interaction between two-year-olds and their parents, although they affected the infants' attachment behavior rather differently (Lamb, 1977e). The stranger's entrance accentuated the display of attachment behaviors to the parent, whereas the other parent's entrance had no measurable impact on the attachment behavior measures.

The changes in affiliative interaction are not surprising: the entrance of a third person means that there is an additional person with whom to interact, so that the infant distributes its attention between the available interactants. Likewise, the parent no longer gives his or her full attention to the baby, and enters interaction with the other adult as well. The decline in interaction, therefore, is mediated by the effect of the third person on both members of the original dyad.

Curiosity about these so-called "second-order" effects led me to pursue this issue in a series of investigations of mother-father-sibling-infant interaction. Since the research I have just described focused on the effects of a

third person's presence on interaction with parent-infant dyads, my first goal was to determine whether the presence of a sibling affected parent-infant dyads the way strangers and parents did. Though the data are not all in, there are indications of both similarities and differences. While the sibling's presence results in inhibition of parent-infant interaction, one-year-old infants do not interact much with their siblings. Instead, it seems that the inhibition of parent-infant interaction is due mainly to the fact that the parents are dividing their attention, and thus are not stimulating as much interaction with the baby. In this instance, then, the sibling's presence diverts the parent's attention, and this relative withdrawal in turn causes the infant to interact less with the parent. On the other hand, several studies (Lamb, 1976e, 1977c) indicate that one-year-olds are insensitive to cues implicit in the relative activity of their parents. Since these two conclusions are incompatible, further research on this score is clearly needed.

In another study that we have just completed, we boldly set out to determine what effort a fourth person's entrance had on triadic interaction (Lamb, 1977d). The fourth person in this case was a parent, while the triad was composed of parent, preschool-aged child, and 18-month-old infant. Briefly, we found that preschoolers and infants both interacted less with each parent and with one another when two parents were present than when only one parent was present.

The results of my investigations of "second-order" effects lead me to two conclusions. First, Bronfenbrenner was certainly correct in suggesting that interaction within any social system under study may be affected by the wider social context in which it is observed. On the other hand, it is important to note that the entrance of a familiar person--be it parent or sibling--leads to a change in the absolute level of interaction, but does not change the relative

levels or the type of interaction taking place. The entrance of a stranger invokes wariness and this in turn leads to an accentuation of attachment behavior directed toward whichever parent is present. The point is: second-order effects do not involve mysterious changes in the patterns of social interaction observed, rather, they involve readily interpretable and predictable effects.

I want to emphasize this point, for it is the central theme of my presentation. I am concerned by a recent trend toward invoking the concept of "ecological invalidity" in the course of disputing findings with which one does not agree. Exploration of ecological variables is needed not so that we can dismiss some findings as "ecologically invalid," but rather, so that we can take ecological variables into account when interpreting such findings. Acknowledgment and understanding of ecological influences on a study's findings may increase rather than decrease the legitimate generalizability of these findings. It is for this reason that further investigation of such variables is necessary.

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